Hard or Soft Digital-Physical Architectures

Integration between information and communication systems and the built environment

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Hard or Soft **Digital-Physical Architectures**

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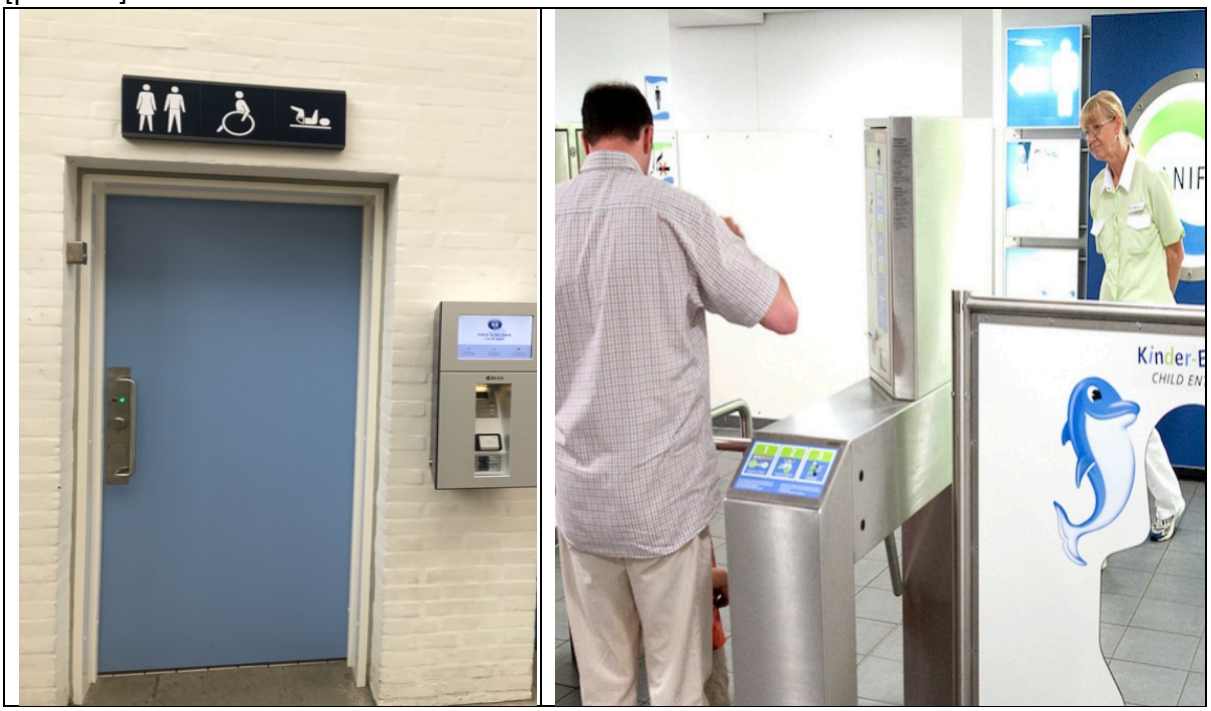
In my presentation, I would like to focus on what I call hybrid experiential architectures – that is how information and communication systems and the built environment together form *digital-physical architectures*.

I take point of departure in two very mundane examples and juxtapose them – one example showing a hard architecture and the other showing a softer architecture.

[pictures]



These are two pictures of interface access points to public restrooms in Denmark and in Germany. One is from a Danish train station and the other is from a German highway – from the restroom area of a gas station.

I am going to unfold a little bit how the digital and the physical are layered here in these examples.

[in relation to the picture on the left (Danish restroom)]
In the first image – which is the restroom door at my local train station – we can see a blue door with a digital interface mounted on the wall next to it. The digital system and the door are coupled, so in order to have access to the restroom, you have to pay via the digital interface. The only access point to the physical space is via the digital system. These two connected architectures - the digital and the physical - create what I call a hard digital-physical architecture. It is impenetrable, if you don't go via the digital system, you don't have access to the restroom. Of course – you might try to break open the door, but that would be serious vandalism and very difficult to do. It is a very sturdy structure.

[in relation to the picture on the right (German restroom)]
If we look at the second image – which is a restroom area from a German 'rest-place' as they call them – found at highway petrol stations – we see a more open architecture with a kind of teller system, where you have to provide either cash payment or a voucher – or a credit card payment to get access – but where there also is a child friendly access point with a dolphin drawing and an opening where children can go through – and this opening is also a kind of flexible construction which can be pushed aside for a stroller or a wheelchair.

Now, this is an example of what I call a soft digital-physical architecture. The intention is clear enough – people are supposed to pay to use the restrooms – but it is also a more porous, a softer and more open digital-physical design – which makes room for particular user needs as well as for urgencies, accident situations.

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These mundane examples show how interactive systems and physical architectures may be layered and integrated. The combined digital-physical structures together form designs that communicate materially and spatially. They grant access or they don't grant access. They literally open or close doors.

They can be flexible or inflexible towards users – they can be understanding and collaborate – and with their physical design communicate an understanding and permissive attitude, for example saying – *'oooh – you really have to go and you don't have money, well no worries, just go through this little opening and nobody will notice'* or they can be inflexible, insensitive and restrictive – for example saying *'you don't have money or you can't get your creditcard or your cell phone to work, well tough luck, that really isn't my problem, there is no way, I am going to let you borrow my restroom'* -

In short: Hybrid architectures mediate dynamics of access or exclusion.

The digital-physical architectures together create borders, boundaries – and the *qualities* of these boundaries are crucial for users, the boundaries enact user friendliness – or not – through their hard or soft character.

Now these kinds of assessments of the qualities of the boundaries – of how the digital and the physical are layered and integrated – we can call this the moral-aesthetic of a design.

The moral-aesthetic quality assessment is developed by design philosopher Yuriko Saito. By taking point of departure in a moral-aestthetic assessment, it becomes possible to discuss the sensitivity, care or respect that a design has in relation to a user. If a user through bodily interaction with a design, experiences that something works well – or not – this is what Saito calls a moral aesthetic assessment. It is not an assessment which has to do with the interpretation of the design, nor is it based on our historical understanding of the design, or of the intention behind the design – it is an assessment which takes place through our uses of the design – through our bodily, sensory experience of it. – and this, according to Saito – is an aesthetic assessment of the design and forms the foundation for talking about the moral-aesthetic of the design.

These designs physically, materially and spatially communicate to users. They communicate flexibility or hostility - and because they both have spatial dimensions – they are spatial designs as well as being ICT interaction designs – they in my opinion are really good examples of the environmental / spatial character of communication interaction designs. They are not media in a mass media sense, but they are definitely designs that mediate and communicate.

Regardless of their mundanity, the examples relate to very important media ecological themes, for example in the interrogation of ubiquitous computing and what to be aware of as information processing is built into all sorts of physical interactions and structures.

Physical spaces increasingly also are digital spaces – and with the embedding of digital interactions and applications in walls, ceilings, signs, etc – the design of digital communication increasingly also is the design of physical environment. This points to how important it is to design communication as it emerges in the links and boundaries between various designs. With pervasive computing, we increasingly face integrated digital and physical structures – and these form part of the emergence of complex communication environments , which in my opinion pose big challenges in relation to how to put human wellbeing – not to speak of environmental concern – at the centre. These complex communication environments show how design crosses boundaries – and *makes* boundaries – these integrated digital-physical archictures both demonstrate communication choices – and challenges! (the overall conference theme).

What kind of input would I like?

- Can you relate to the examples, although they are from a European context?
- Can you think of any similar examples from your own domains?
- How do you see this relate to core readings in media ecology?